CLAIMS

1. A system for assisting regeneration of a particle filter integrated in an exhaust line (3) of a motor vehicle diesel engine (1), the engine (1) being associated with various units, including:

- means (2) for admitting air into the engine;
- means (4) for recycling exhaust gases from the engine to the inlet thereof;
- a turbocompressor (5);
- a particle filter (7) including a filter medium adapted to trap particles of soot present in the exhaust gases of said engine (1);
- an oxidation catalytic converter (6) on the upstream side of the particle filter (7) in the exhaust line (3) or combined therewith;
- a common system (8) for feeding fuel to the cylinders of the engine, including electrical fuel injectors (9, 10, 11, 12) associated with those cylinders;
- means (16) for adding to the fuel an additive adapted to be deposited in the bed of soot particles to reduce the combustion temperature of particles trapped in the particle filter (7) and to propagate their combustion;
- means (20, 21, 22) for acquiring information relating to various operating parameters of the engine and the units associated therewith;
- means (17) for monitoring the operation of the air admission means, the recycling means, the turbocompressor and/or the fuel feeding system in order to monitor the operation of the engine, these means being further adapted to trigger a phase of regenerating the particle filter by combustion of the particles trapped therein by triggering a phase of multiple injections of fuel into the cylinders of the engine during their expansion phase;

the system being characterized in that said filter medium of said particle filter (7) is coated and/or

impregnated with a material capable of constituting a reserve of oxygen adapted to propagate the combustion of the soot during an operation of regenerating the particle filter.

2. A system according to claim 1, characterized in that said material is cerium oxide.

3. A system according to claim 1, characterized in that said material is a mixed oxide of cerium and zirconium.

4. A system according to any one of claims 1 to 3, characterized in that the particle filter (7) is also coated and/or impregnated with a catalyst encouraging the triggering of reactions tending to reduce the pollutant emissions of the engine.

5. A system according to claim 4, characterized in that the particle filter (7) is also coated and/or impregnated with a catalyst encouraging the triggering of combustion of the soot.

6. A system according to claim 4 or claim 5, characterized in that said catalyst is a metal from group VIII such as platinum, palladium, or rhodium, or a mixture of such metals.

7. A system according to any one of claims 1 to 6, characterized in that the distribution of the various materials in the filter (7) is non-uniform.

8. A system according to claim 7, characterized in that the material capable of constituting a reserve of oxygen is preferentially disposed in the downstream region (29) of the inlet passages (25) of the filter (7).

9. A system according to claims 5 and 7 or 8,

characterized in that the catalyst encouraging the triggering of the combustion of the soot is preferentially disposed in the upstream region (28) of the inlet passages (25) of the filter (7).

10. A system according to any one of claims 7 to 9, characterized in that the terminal portion of the downstream region (29) of the filter (7) contains no material constituting a reserve of oxygen and no catalyst.

11. A system according to any one of claims 7 to 10, characterized in that the material constituting a reserve of oxygen is preferentially disposed in the peripheral region (34) of the cross-section of the filter (7).

12. A system according to claim 5 and any one of claims 7 to 12, characterized in that the catalyst encouraging the triggering of the combustion of the soot is preferentially disposed in the central region (35) of the cross-section of the filter (7).